Uniclave 88

Top Load Steam Sterilizer

Operating and Maintenance Manual

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INTRODUCTION

The vertical sterilizers, of the "UNICLAVE 88" series, are designed for the sterilization of surgical instruments, liquids, rubber, laboratory materials, etc...

The sterilizer is top-loaded, using special stainless steel baskets.

With its variable controls, it offers a range of cycles with sterilisation temperatures varying between 100ºC and 135ºC and sterilisation time periods between 0 and 120 minutes.

Drying is improved by vacuum produced by thermal shock using the water coil or by slow exhaust.

Manufacture is standardized with two cilindrical sterilization chambers of 30 x 50 cm and 40 x 60, diameter x depth respectively. (Usefull sizes)

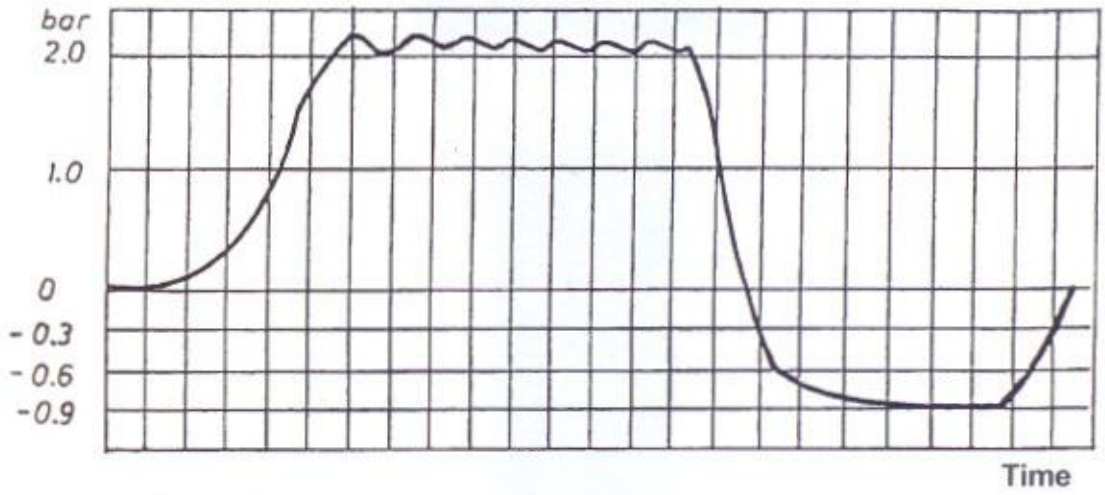
The chamber and lid as well as the front and side panels are construted of stainless steel. Lid closing is done by means of several stainless steel screws and threaded handles.

The hermetic sealing between the chamber and the lid is achieved by the compressing of the silicone rubber ring.

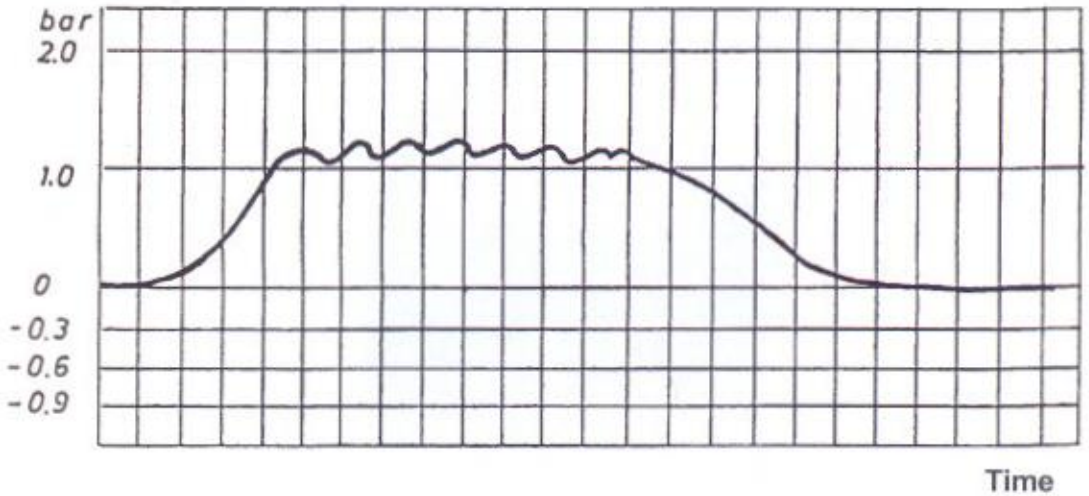
In all the sterilizers models constructed by A.J.Costa (Irmãos) Lda, the sterilizing chambers are tested both hydraulically and with steam during the assembly phase.

UNICLAVE 88
TECHNICAL CHARACTERISTICS

TYPICAL DIAGRAM FOR STERILIZATION OF SURGICAL INSTRUMENTS



TYPICAL DIAGRAM FOR STERILIZATION OF LABORATORY ITEMS



UNICLAVE 88
TECHNICAL CHARACTERISTICS

The differential between the required temperature and the temperature reached is 2 degrees Centigrade.
The sterilization and drying times are programmed by the operator.

Model / Characteristics	UNICLAVE 88 Ø30x50	UNICLAVE 88 Ø40x60		
	Standard	*Standard*	*Special*	*Special*
Power supply	1ph/220V/50Hz-2000W	3ph/380V/50Hz-6000W	3ph/220V/50Hz-6000W	1ph/220V/50Hz-4500W
Volt. (V)	220	380	220	220
Intensity (A)	1x10 A	3x16 A	*3x16 A*	*1x25 A*
Electric Feed Conductor	1x2,5+N2,5+T2,5	3x2,5+N2,5+T2,5	3x2,5+T2,5	1x4,0+N4,0+T4,0
Electrical resistance	1x2000W	3x2000W	3x2000W	3x1500W

Model / Characteristics	*CONSUMPTION*	
	UNICLAVE 88 Ø30x50	UNICLAVE 88 Ø40x60
Electricity	- Heating up to 134°C - 2Kw - 10 minutes to sterilization at 134°C - 0,25Kw	- Heating up to 134°C - 2Kw - 10 minutes to sterilization at 134°C - 0,25Kw
Distilled Water	11 liters per cycle	20 liters per cycle

UNICLAVE 88
OPERATING DEVICES AND SERVICE CONNECTIONS

FRONT VIEW

REAR VIEW

LEGEND:

1 - Sterilizer drain 3/4"
(Instalation Drain 1 1/2"female
at ground level))

2 - Water connection flexible hose to 3/4" M
tap on the wall

3 - Electricity input

4 - Temperature controller and indicator

5 - Timer

6 - Pressure vacuum gauge

7 - Three positions switch

8 - Indicator lights

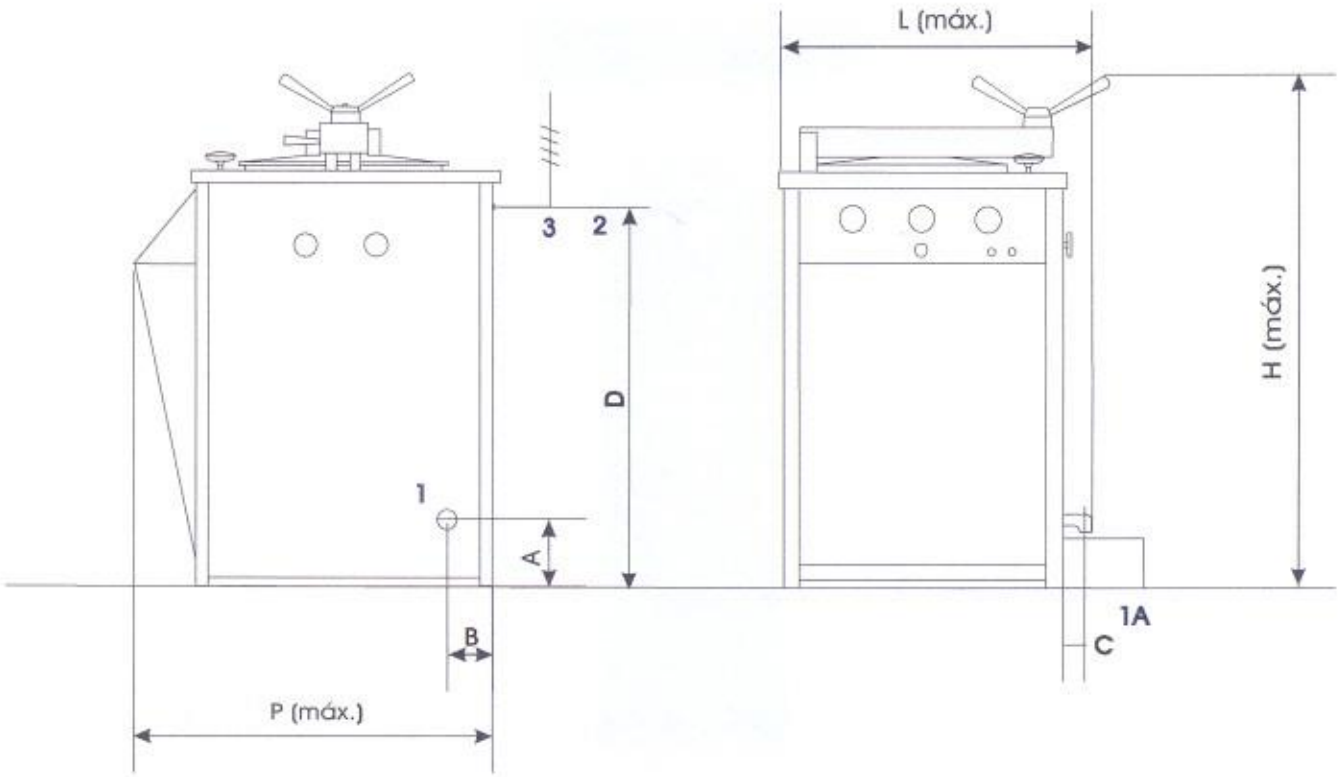
9 - Condensing water tap

10 - Drying water tap

11 - Drain tap

UNICLAVE 88
DIMENSIONS TABLE AND CONNECTIONS

Useful dimensions of the sterilizer and sterilization chamber.



DIMENSIONS

CHAMBER (Udefull size)	*Ø30x50*	*Ø40x60*
H(máx.)	980	1110
L(máx.)	510	680
P(máx.)	670	780
A	135	
B	120	
C	100	
D	705	835
Electric Input (Watts)	1x2000	3x2000 3x1500

1 - Sterilizer drain 3/4"

1A - Instalation Drain 1 1/2" female at ground level

2 - Water connection flexible hose to 3/4" M tap on the wall

3 - Electricity input

Dimensions on mm

UNICLAVE 88
OPERATING INSTRUCTIONS

1. Make sure the "DRAIN" and "DRYING" taps are tightly closed.

2. Fill the sterilizer with water 2 cm above the level of the central resistance. (Demineralised or distilled water should be used).

3. Load the sterilizer with the material to be sterilized.

4. Close the lid of the sterilizer, by screwing the threaded handles.

5. Set the required sterilization temperature, on the temperature controller and indicator, located on the control panel .

6. Turn the three position main switch to the "ON" position. The green indicator "ON" will light and a buzzer will sound.

7. Turn the clock to the required sterilization time.The buzzer will stop and the resistances will start the heating up.

8. Open the "CONDENSING" tap slightly (just enough to condense the steam going to the drain).

9. As soon as the required sterilisation temperature is reached, the red indicator "STERILIZATION" will light and the sterilization timer will start counting.

10. At the end of the sterilization time, the buzzer will sound. Turn off the three position switch to "0", the indicators lamps go off. Slowly open the "DRAIN" tap.

11. Before the pressure vacuum gauge, located on the control panel, shows 0 bar, the "CONDENSING" tap should be closed. Immediately afterwards, when 0 bar is reached, close the "DRAIN" tap and open the "DRYING" tap for water to run in the coil for a period of 20 minut. (drying time).

12. At the end of the above-mentioned period, proceed as follows:

a) Close the "DRYING" tap.
b) Loosen the threaded handle that tight the lid.handle securing the lid.
c) Turn the three position switch to "VACUUM BREAK" position.
d) Open the lid, when the pressure vacuum gauge indicates 0 bar.

- In case of laboratory sterilization cycles, the drying phase may be not required. Simply omit operations 11 and 12. At the end of the sterilization cycle proceed as 12 b); c); d).

- For very long sterilization cycles (laboratory), the quantity of water required must be increased.

- The differencial between the required temperature and the reached temperature is 2°C.

- The sterilization time is pré programmed by the operator and the drying time is controlled by the operator.

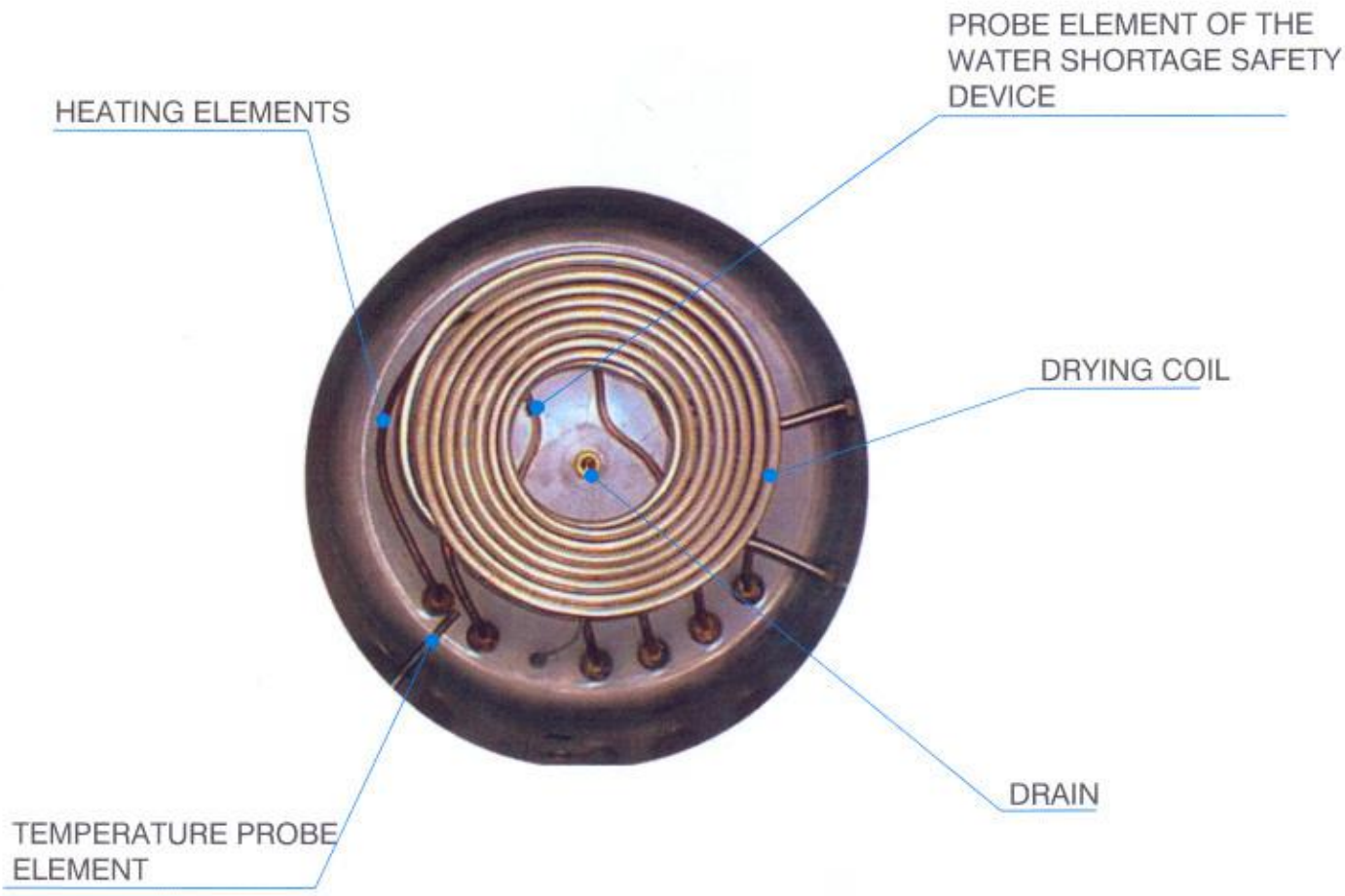
UNICAVE 88
INSTRUCTIONS

When assembling the brass 3/4" elbow (A) to the drain of the sterilizer, it is recommended that:

Hold on the tube (1) with a pipe-wrench so that the tubing inside the machine is not twisted.

Screw the elbow in the way shown by the arrow (2).

UNICLAVE 88
INTERNAL VIEW OF THE BOTTOM OF THE CHAMBER



MAINTENANCE PLAN

DAILY:

- Clean external panels
- Clean internal chamber

WEEKLY:

- Check that indicating lamps are working
- Check the ratio Pressure/Temperature during sterilization

MONTHLY:

- Vacuum test
- Clean drainage filter
- Test temperature controller
- Lubricate handles with non melting grease
- Clean purger, check and replace if necessary

ANNUALY:

- Check bateriological filter and replace it
- Check safety Pressure Switch operation
- Measure electrical supply by phase
- Measure earth current
- Check, clean and lubricate or replace if necessary
  - -electromagnetic valves
  - -safety valve
  - -drainage valve
- Replace seals on condensation and drying valve
- Replace door gasket sealing
- Check working order of the water shortage safety device
- Replace the purger

MAINTENANCE PLAN

Checking of Pressure/Temperature ratio

This ratio check should be carried in accordance with the table below (the table refers to absolute pressures. 1 bar should be added to the pressure as read on the chamber's gauge).E.g.: When the pressure shown on the gauge is 1,1bar, the absolute pressure is approximately 2,1 bar and the temperature should be 121°C.

C	K	BAR	C	K	BAR
70	343.15	0.3116	110	383.15	1.4327
71	344.15	0.3253	111	384.15	1.4815
72	354.15	0.3396	112	385.15	1.5316
73	346.15	0.3546	113	386.15	1.5832
74	347.15	0.3696	114	387.15	1.6362
75	348.15	0.3855	115	388.15	1.6906
76	349.15	0.4019	116	386.15	1.7456
77	350.15	0.4186	117	390.15	1.8039
78	351.15	0.4365	118	391.15	1.8628
79	352.15	0.4547	119	392.15	1.9233
80	353.15	0.4736	120	393.15	1.9854
81	354.15	0.4931	121	394.15	2.0492
82	355.15	0.5133	122	395.15	2.1145
83	356.15	0.5342	123	396.15	2.1816
84	357.15	0.5557	124	397.15	2.2504
85	358.15	0.5780	125	398.15	2.3210
86	359.15	0.6011	126	399.15	2.3933
87	360.15	0.6249	127	400.15	2.4675
88	361.15	0.6495	128	401.15	2.5435
89	362.15	0.6749	129	402.15	2.6215
90	363.15	0.7011	130	403.15	2.7013
91	364.15	0.7281	131	404.15	2.7831
92	365.15	0.7561	132	405.15	2.8670
93	366.15	0.7849	133	406.15	2.9528
94	367.15	0.8146	134	407.15	3.041
95	368.15	0.8453	135	408.15	2.131
96	369.15	0.8796	136	409.15	3.223
97	370.15	0.9094	137	410.15	3.317
98	371.15	0.9430	138	411.15	3.414
99	372.15	0.9776	139	412.15	3.513
100	373.15	1.0133	140	413.15	3.614
101	374.15	1.0500	141	414.15	3.717
102	375.15	1.0878	142	415.15	3.823
103	376.15	1.1267	143	416.15	3.931
104	377.15	1.1668	144	417.15	4.042
105	378.15	1.2080	145	418.15	4.155
106	379.15	1.2504	146	419.15	4.271
107	380.15	1.2941	147	420.15	4.389
108	381.15	1.3390	148	421.15	4.510
109	382.15	1.3852	149	422.15	4.634

VACUUM TEST

Switch the sterilizer off with the chamber at a vacuum of -0,9bar and wait for one hour. If, at the end of that time, the pressure in the chamber is not between -0,9 and -0,85bar, this shows that there is a leak in the chamber through one of its components.

- Drainage valve
- Electromagnetic purging valve
- Electromagnetic airing valve
- Safety valve
- Gasket sealing
- Connections pieces

TEMPERATURE CONTROLLER TEST

Fill the sterilizer with water 2 cm above the level of the temperature controller probe element.

- Set the controller to 110ºC
- Switch on the sterilizer (With the lid open) and wait for the water to start boiling.

Conclusion: The temperature inside the chamber at this point is 100ºC and the temperature controller should indicate between 98 and 102ºC.(The test is valid at sea level).

FUNCTIONING OF SAFETY PRESSURE SWITCH

Raise the pressure inside the chamber and check that the pressure switch works at a pressure of 2,5 bar 138ºC.

ELECTRICITY:

- Measuring of current by phase
- Measuring of earth current

Place an ammeter on the measuring point. The following are acceptable values for measure the phases:

3 Ph-220V-6000W / 3 Ph-380V-6000W	***1Ph-220V-4500W***	***1 Ph-220V-2000W***
R - 8 to 10 Amp. S - 8 to 10 Amp. T - 8 to 10 Amp. EARTH - Up to 300 mA	R - 19 to 21 Amp.	R - 8 to 10 Amp.

This test can also be carried out using a pincer type ammeter.

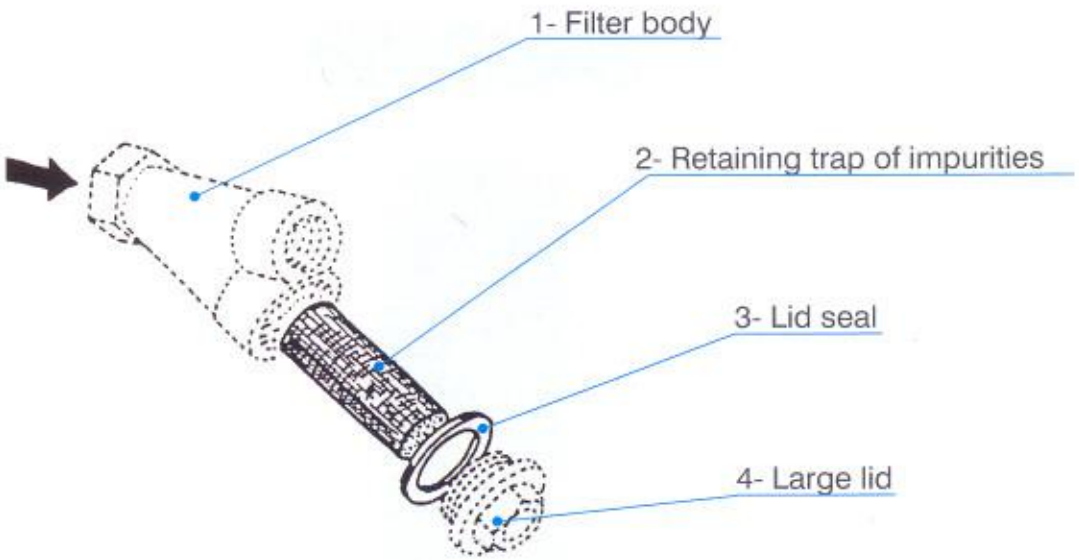
CHECKING OF THE WATER SHORTAGE SAFETY DEVICE

Fill the sterilizer without fully covering the central heating element (about ½ covered) and switch on, the sterilizer following normal procedure.

The device should operate under these circumstances, and the central blue button should be triggered.

The device can only be rearmed after cooling down, by pushing in the blue button with a screwdriver.

DRAINAGE FILTER



Periodically remove large lid, (4) with draw retaining trap, (2) wash them very well, replace lid seal (3) and remount the filter.

In case trap (2) is damaged, replace it by another trap.

BREAKDOWN / PROBLEM

1- If a problem arises, the first step is to check the elements necessary for the functioning of the equipment: whether they are in working order or faulty.
E.g. : Electrical supply, water...

2- Faults detected in the functioning of a component should be corrected.
E.g.: valves, filters, pressure switch and thermostat.

3- Tubing should be checked for possible leaks.
E.g.: drainage tube, steam .....

4- The operating instructions should be followed.

5- In case Maintenance Procedure, some testes which may facilitate the diagnosis of faults are described.
E.g.: Vacuum test, test of pressure / thermostat

SOLUTIONS PROBLEMS / CHECK CHART

PROBLEM / CHECK	The Autoclave does not switch on	The required pressure is not reached or takes a long time	Termination of sterilisation is not Signalled	Water does not drain away	Temperature and pressure do not correspond	Abnormal Drying (Weak vacuum)	Leakage of Lid Seal	One or more circuit breakers are triggered
ELECTRICAL CIRCUIT	x	x						x
Drainage Valve and Filter		x		x		x		
Pressure switch and thermostat		x			x			
Purging Valve and Purifier		x			x	x		
Heating Elements		x						
Safety valve		x						
"Shortage of Water" Indicator light ON	x							
Buzzer			x					
Vacuum gauge					x			
Timer								
Command Fuse	x							
Carry out Vacuum Test						x		
See Operating Instructions						x		
Air in Chamber during Sterilisation					x	x		
Test pressure switch and thermostat					x			
Lid Seal - Adjustment of Lid							x	

SPARE PART LIST

UNICLAVE 88			QUANTITY FOR MACHINE			
DIAGRAM POSITION	**DESIGNATION**	**REF.**	**A**	**B**	**C**	**D**
F1	Command and control circuit fuse 5x20 3A	205311005003	1	1	1	1
D2	Automatic Safety Device	204110000160	1	1	1	1
P3	Pressurestat H545-25-M540	75421M54SM54	1	1	1	1
I4	Contact block E22B2	1350100E22B2	2	2	2	2
I4	Selector E22VJ1	135010E22VG1	1	1	1	1
EV5/EV6	Electrovalve 3/8" SCXE 263A306	7546AE263A30	2	2	2	2
S7	Green "ON" light	2081430012VD	1	1	1	1
S8	Red "STERILIZING" light	2081430012VM	1	1	1	1
T9	Timer 0-120 minutes	205923000001	1	1	1	1
B10	Buzzer (Audible signal) SMJA - 12V	201800050480	1	1	1	1
RL11	Double relay 220V	208001102220	1	1	1	1
CT12	Thermostat 50 to 150°C STORK	031060P20151	1	1	1	1
CNT13	Contactor CE15BN4B	133CE15BN4B0	1	1	1	1
3R14	Central heating element 2000W	8315RL200030	1	-	-	-
3R14	Lateral heating element 2000W	8315RL200040	-	2	2	-
3R14	Central heating element 2000W	8315RC200040	-	1	1	-
3R14	Lateral heating element 1500W	8315RL150040	-	-	-	2
3R14	Central heating element 1500W	8315RC150040	-	-	-	1
MV15	Vacuum gauge -1+5 - WIKA	0963WIKAH105	1	1	1	1
VM16	Water valve for condenser 1/2"	755510000CV3	1	1	1	1
VM17	Water valve for drying 1/2"	755510000CV3	1	1	1	1
MP18	Closing handle	831505UNI088	1	1	1	1
PG19	Purger BPT 13A	754110110003	1	1	1	1
VS20	Spring type safety valve ½"	75487G3CAP00	1	1	1	1
VM21	Manual Drainage Valve ½"	755330000003	1	-	-	-
VM21	Manual Drainage Valve ¾"	755330000004	-	1	1	1
J22	Silicone Lid seal Ø30	8310210320P0	1	-	-	-
J22	Silicone Lid seal Ø40	831021040800	-	1	1	1
FT23	Bronze Y drainage filter ½"	753716000003	1	-	-	-
FT23	Bronze Y drainage filter ¾"	753716000004	-	1	1	1
3DJ24	10 Amp./Neutral Circuit Breaker	204410100100	1	-	-	-
3DJ24	16 Amp. Circuit Breaker	204410100160	-	3	3	3
3DJ24	16 Amp. Circuit Breaker	204410100160	-	3	3	3
3DJ24	25 Amp./Neutral Circuit Breaker	204410300250	-	3	3	3
------	Seal for drainage valve ½"	755330000003	1	1	1	1
------	Seal for drainage valve ¾"	756VED00000	1	1	1	1
FT25	Bacteriological filter	080ZGPB01V00	1	1	1	1

A - Uniclave 88 - Ø30x50 - 1 phase-220V-2000W (standard)
B - Uniclave 88 - Ø40x60 - 3 phase-380V-6000W (standard)
C - Uniclave 88 - Ø40x60 - 3 phase-220V-6000W (special)
D - Uniclave 88 - Ø40x60 - 1 phase-220V-4500W (special)